WHAT IS CLAIMED:

1. A process for producing styrene by catalytic dehydration using at least two separate reactors, said process comprising:
   (a) feeding a 1-phenylethanol-rich reaction mixture to a first reactor operating at a temperature between 150 °C and 350 °C; and
   (b) transferring the partially catalytically dehydrated mixture to a second reactor operating at a temperature between 150 °C and 350 °C.

2. The process of claim 1, in which step (a) is followed by the following steps:
   (b) transferring the partially catalytically dehydrated mixture to a distillation unit;
   (c) separating the mixture from the distillation unit into a fraction comprising low-molecular weight compounds and high molecular weight compounds;
   (d) transporting the fraction comprising low-molecular weight compounds to an outlet; and
   (e) transporting the fraction comprising high molecular weight compounds to a second reactor.

3. The process of claim 2, in which step (b) comprises:
   (b) transferring part of the catalytically dehydrated mixture to a distillation unit, and part of the mixture to a second reactor operating at a temperature between 150 °C and 350 °C.

4. The process of claim 3 wherein step (b) further comprises recycling part of the mixture from the second reactor into the first reactor.

5. The process of claim 3 wherein step (b) further comprises transferring part of the mixture from the second reactor to a third reactor.

6. The process of claim 3 wherein step (b) further comprises transferring part of the mixture from the second reactor to the distillation unit.

7. The process of claim 3 wherein step (b) further comprises transferring part of the mixture from the second reactor to a second distillation unit.

8. The process of claim 1 wherein the dehydration reaction is performed in the liquid phase at a reactor temperature of 180 °C to 280 °C.

9. The process of claim 8 wherein a reactor temperature of 200 °C to 260 °C is used.

10. An apparatus for producing styrene by catalytic dehydration of 1-phenylethanol comprising a feed line to a first reactor with optionally a recycle inlet and further comprising at least one of a conduit to a second reactor and a conduit to a distillation unit, comprising at its upper end an outlet for releasing low-molecular compounds and at its lower end a conduit for feeding high-molecular compounds into the second reactor, comprising at least one inlet for high-molecular compounds, optionally a conduit to the distillation unit or to another distillation unit, and optionally an outlet to a conduit that is connected to the optional recycle inlet of the first reactor and/or a conduit to a further reactor, at least one of the first and second reactor comprising a conduit to the distillation unit.

11. The apparatus of claim 10 comprising a first reactor with an optional recycle inlet and a conduit to a second reactor, comprising a conduit to the distillation unit and optionally an outlet to the

conduit that is connected to the optional recycle inlet of the first reactor.